

**What is claimed:**

1           1.       Said electromechanical valve actuator (301, 500) for internal combustion  
2 engines, equipped with a polarized electromagnet (300; 504; 506) exerting a magnetic  
3 action on a magnetic plate (302; 502) subjected to a mechanical restoring action, which  
4 said action can compensate the mechanical action and maintain the plate (302; 502) in a  
5 distant position from the electromagnet, characterized in that the actuator comprises  
6 means to ensure that the displacements of the plate are controlled solely by this  
7 electromagnet and the mechanical restoring action in such a way that the plate performs  
8 shuttle movements starting from the distant position.

1           2.       Actuator in accordance with claim 1, characterized in that it comprises  
2 means to ensure that the distant position of the plate corresponds to an open position of  
3 the valve.

1           3.       Actuator in accordance with one of the above claims, characterized in that it  
2 comprises means to move the plate (302; 502) away from the electromagnet (300; 504;  
3 506) by annulling or inverting the direction of the supply current of the latter.

1           4.       Actuator in accordance with one of the above claims, characterized in that  
2 the plate (302; 502) is maintained at such a distance that the rod (510) of the valve will  
3 be distant from a rod (508) of the plate controlling this valve.

1           5.       Actuator in accordance with one of the above claims, characterized in that,  
2 with the electromagnet (300; 504; 506) having the shape of an E provided with a central  
3 branch (304) and two end branches, the plate has across section ( $S_p$ ) smaller than the  
4 cross section ( $S_{c/2}$ ) of the end branches and/or smaller than half the cross section ( $S_c$ ) of  
5 the central branch.

1           6.       Actuator in accordance with one of the above claims, characterized in that,  
2 with the electromagnet having the shape of an E, a magnet is fixed at the end of these  
3 branches opposite the plate.

1           7.       Actuator in accordance with one of the above claims, characterized in that

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2 the mechanical restoring action is generated by at least one spring.

1 8. Internal combustion engine equipped with an electromechanical valve  
2 actuator, comprising a polarized electromagnet (300; 504; 506) and a mobile magnetic  
3 plate (302; 502) subjected to a mechanical restoring action, characterized in that the  
4 actuator is according to one of the above claims.